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ABSTRACT

During the past decade, many departments of agricultural education have used microteaching in the preparation of teachers. Research has found that microteaching has a positive effect on students' views of themselves as teachers and their attitudes toward and perceptions of teaching. Microteaching also allows a student to view his or her strengths and weaknesses as they relate to teaching. Even though microteaching is beneficial, it has disadvantages--the cost and maintenance of videotape equipment and the amount of time involved in videotaping. With reduced budgets in sight at many universities, other techniques of teacher preparation are being tried. One of these methods, reflective teaching, uses competitive teaching strategies to inspire student teachers to get their concepts across. It does not require expensive equipment and appears to require less time on the part of the college instructor than does microteaching. In a study, students participating in reflective teaching were compared with students participating in microteaching on the following dependent variables: students' views of themselves as teachers; students' attitudes toward teaching; students' perceptions of the role of teaching; students' attitudes toward the type of laboratory teaching experience in which they were engaged (microteaching or reflective teaching); and students' teaching performance as measured by their student teaching grades. In this study, two groups of student teachers at Purdue University were randomly assigned to the microteaching or the reflective teaching laboratory. Pre- and posttests of the groups showed no significant differences in the dependent variables (attitudes) of either group. Therefore, it was concluded that reflective teaching is as effective as microteaching in preparing students to teach and should be considered for use in the future in preparing vocational teachers. (KC)

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A COMPARISON OF TWO METHODS OF PROVIDING LABORATORY TEACHING EXPERIENCE FOR STUDENT TEACHERS IN AGRICULTURAL EDUCATION

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INTRODUCTION

During the past decade many departments of Agricultural Education have used microteaching in the preparation of teachers. Research (cited later) has found that microteaching has a positive effect on students' views of themselves as teachers and their attitudes toward and perceptions of teaching. Microteaching also allows a student to view his or her strengths and weaknesses as they relate to teaching. Even though microteaching is beneficial there are certain disadvantages associated with the technique, primarily; the cost of equipment, the problems of maintanance and mobility of equipment, and the amount of time involved in videotaping. With reduced budgets in sight at many universities it appears research is needed into techniques for providing students with appropriate laboratory teaching experiences which are more cost effective, less time consuming, and as effective as microteaching.

A new technique for providing students with laboratory teaching experience, reflective teaching, has recently been introduced in education. Reflective teaching does not require expensive equipment and appears to require less time on the part of the college instructor than does microteaching. However, very little research is available which examines the effect of reflective teaching on students' attitudes and perceptions concerning teaching.

Teacher educators should be concerned that prospective teachers be provided with the highest quality forms of laboratory teaching experience. In order to accomplish this task a question arises that needs to be investigated and that is; How do these two forms of laboratory teaching experience (reflective teaching and microteaching) compare in the preparation of teachers?

OBJECTIVE OF THE STUDY

The specific objective of the study was to compare students participating in reflective teaching with students participating in microteaching on the following dependent variables:

a. students' views of themselves as teachers.
b. students' attitudes toward teaching.
c. students' perceptions of the role of teaching.
d. students' attitudes toward the type of laboratory teaching experience engaged in (microteaching or reflective teaching).
e. students' teaching performance as measured by their student teaching grade.

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RELATED LITERATURE

Reflective Teaching

Reflective teaching is a recently developed method of providing laboratory teaching experience in a preservice teacher education program. Reflective teaching, as described by the originator, is "'Competitive' peer teaching where several teachers vie to accomplish the same objective with different groups of pupils composed of peers" (Cruickshank, 1977, p. 8). More specifically Cruickshank (1977, p. 2) describes reflective teaching as follows:

> During Reflective Teaching every sixth class member is designated a teacher. Designated teachers are given the same behaviorally-stated learning objective to obtain. They then independently prepare lessons whereby each thinks the objective can be accomplished. The next time class meets the participants not designated as teachers are placed in equal-sized groups and sent to several teaching stations. Each designated teacher then goes to a teaching station and, upon signal from the instructor, initiates the lesson. At another signal from the instructor, the lessons are stopped and a tally is made of the number of learners in each group who achieved the objective. An assessment also is made of learner satisfaction. Within-groups, the designated teacher and learners discuss the relative success of that group in gaining the objective. Emphasis is on getting the participants to reflect upon the lesson and to project why learning did or did not occur. Across-groups participants share their reflections and, in addition, compare and contrast the teaching strategies used by the various designated teachers. If the lessons are videotaped than replay permits the whole class to see the variety of ways designated teachers attempted to bring about the same objective.

For this research a series of reflective teaching lessons were designed based on teaching behaviors most often used by vocational agriculture teachers. These teaching behaviors are: demonstrating, explaining, describing, fostering attitude change, and a combination of explaining/demonstrating. Each lesson also covers a specific learning domain: psychomotor, cognitive or affective. The lessons have been designed to cover information that could be taught in vocational agriculture classes but which most teacher education students would have little prior knowledge of. Eighteen different lessons were used in this study.

Reflective teaching, being a recently developed method of providing on-campus laboratory teaching experience to preservice teacher education students, has few findings. Preliminary findings on reflective teaching by Williams and Kennedy (1980) and Peters (1980) were not conclusive enough to suggest that reflective teaching had a significant effect on preservice teachers' views of themselves as teachers and their attitudes toward and perceptions of teaching.

Microteaching

Microteaching is a scaled-down version of a real teaching situation in terms of time and number of students taught and introduces prospective teachers to the complexity of teaching. It is an instructional alternative whereby students practice teaching a "technical skill" (i.e., set induction) with a small group of pupils normally composed of peers.

Video taping was added as a means of improving feedback and retaining a record of progress in teaching ability. Video taping is not an essential part of microteaching, but it enhances the technique and makes it a more powerful instructional tool.

The scope of microteaching varies from one teacher education program to another. The use of microteaching ranges from a videotape studio where teacher education students are subjected to behavior models chosen for them to very loose open formats which allow teacher education students the freedom to choose their own teaching behaviors to practice.

The purpose of microteaching in the Agricultural Education program at Purdue University is to provide an opportunity for teacher education students to obtain a liberal amount of teaching practice under optimum conditions without endangering the learning of pupils. When teacher education students engage in a microteaching lesson in their subject area they focus upon a specific aspect of teaching (i.e., set induction, demonstration or short lesson). The students prepare their lessons to be taught and present them to the other members of the class (group size varies depending on size of class). Each lesson usually lasts anywhere from eight to twelve minutes in length. Upon completion teachers receive a critique of their presentation and a chance to view their performance on video tape.

In reviewing the literature on the use of microteaching in preservice teacher education programs, the evidence suggests that microteaching not only provides students with preliminary experience and practice in teaching but also has a positive effect on their views of themselves as teachers and their attitudes toward and perceptions of teaching.

Klingstedt (1976), McIntrye and Duthie (1977), Malone (1972), and Stanton (1978) indicated that microteaching produced significant gains in prospective teachers' self concepts. Ward (1970), Beetner and Johnson (1968), and Hargie (1977) reported findings in which microteaching produced positive attitudes toward laboratory teaching experience and toward teaching. Klingstedt (1976), McIntrye and Duthie (1977) and Ward (1970) indicated that microteaching also had a positive effect on students' perceptions of the role of teaching.

Self Concept, Attitudes, and Perceptions

There is a substantial volume of literature and research in teacher education concerning self concept, attitudes and perceptions. The literature on self concept indicates that individuals who have a positive view of self have a distinct advantage when dealing with life. People that feel positively about themselves meet life expecting to be successful. With successful expectations individuals behave in ways that tend to bring success about. In the same manner damage to one's self concept makes one less able to do well. As Dumas (1969) said, "Success or the perception of success breeds success. Failure or the perception of failure, likewise breeds failure" (p. 275).

Self concepts, attitudes and perceptions have been found to be highly correlated to the value system of the individual. Felker (1974) stated:

> The self-concept is an extremely powerful factor in the growth and development of human beings. Part of the power comes from its uniqueness. Every individual has a set of self-directed perceptions, ideas and attitudes. The role of the self-concept is threefold. The self-concept operates as a mechanism for maintaining inner consistency; the self-concept determines how experiences are interpreted; and the self-concept provides a set of expectancies. Each of these factors is a powerful determiner of behavior. (pp. 6-7).

Therefore, one may assume that an individual with a positive view of self should also possess positive attitudes and perceptions. This assumption should hold true for teachers. Research (Combs, 1965; Combs, Richards and Richards, 1976; Wylie, 1961; and Felker, 1974) has shown that teachers who perceive themselves in positive ways behave likewise. A primary concern of teacher educators should be that of providing prospective teachers with opportunities to develop positive views of themselves as teachers and positive attitudes toward and perceptions of teaching. If laboratory teaching experiences such as microteaching and reflective teaching can provide the means by which teacher education students can develop positive self concepts, attitudes and perceptions, then every effort should be made to investigate the effects of laboratory teaching experiences on these variables.

It appears inevitable that some students preparing to teach may have unsuccessful laboratory teaching experiences which could possibly damage their views of themselves as teachers and their attitudes toward and perceptions of teaching; however, Sharpe (1956) believes that:

> Even failure may provide some satisfaction if it leads to the realization of one's limitations and to steps to correct them. The most satisfying experiences are those in which a student is able to recognize education in process; where he is able to observe changes in understanding and behavior conditioned by the learning situation in which he has played some significant role. (p. 197).

Therefore, through feedback and analysis of laboratory teaching performance, prospective teachers may find satisfaction with themselves and incur little or no damage to their views of themselves as teachers and their attitudes toward and perceptions of teaching.

As a result of this study, teacher educators may have an alternative to microteaching that will not only provide another form of laboratory teaching experience but will also have a significant effect on students' views of themselves as teachers and their attitudes toward and perceptions of teaching. By comparing these two forms of laboratory teaching experience, the extent to which microteaching and reflective teaching are valuable learning experiences for those preparing to teach can be determined.

METHODS AND PROCEDURES

Methodology

At the beginning of the spring semester, 1981, students in "Methods of Teaching Vocational Agriculture," (N = 44) at a major land-grant university were randomly divided into two equal-sized groups. One group of students was randomly assigned to the reflective teaching lab while the other students were assigned the microteaching lab.

The teaching labs met for two hours every Friday for eight weeks. During the lab the students taught mini-lessons to their peers. The microteaching students were allowed to select any topic that would normally be taught in a Vo-Ag program and present an 8-12 minute lesson on that topic. Students were encouraged to begin each lesson with some type of interest approach (i.e., set induction). Each student presented two lessons to the other class members (N = 22). A video tape was made of each student's presentation which was later viewed by the student who taught the lesson. After each presentation the student was critiqued by the college instructor and the peer group.

Students in reflective teaching were assigned pre-determined lessons to teach. The lessons included objectives and content but contained no suggestions for teaching procedures. Each reflective lesson was simultaneously presented by four different teachers to four peer groups. After the lesson the learners were tested over what had been taught. This was followed by a discussion and sharing of the various teaching methods used. The lessons were over topics that could be taught in agriculture but were not commonly taught such as Angora goats, triticale, displaying a flag, figuring depreciation, using weeds for oil, beekeeping, etc. Eighteen different lessons were used. Each student presented three reflective lessons.

Three different instruments were completed by the students at the start of the experiment. These instruments were designed to measure student attitudes toward teaching, student perceptions of their own teaching ability, and student perceptions of teaching in general.

These instruments were completed again at the conclusion of the experiment. The research design would be classified as Campbell and Stanley's design 4 - pretest posttest control group design.

Instrumentation

Four major instruments were used in this research. They were: Myself as a Teacher Scale, Purdue Teaching Attitude Scale, When I Think About Teaching Scale, and Students' Reaction to Laboratory Teaching Experience. The first three were used both as pretests and posttests while the last was used as a posttest only.

The 14 item Myself as a Teacher Scale, developed by the researchers, measured students' views of themselves as teachers. The alpha reliability of this instrument is .91. The instrument was designed to determine how students perceive their own teaching ability. Examples of items on the instrument are: "I believe that I can inspire and motivate students to learn" and "I believe I will have difficulty bringing about learner achievement." A 1-99 scale was used on each of the items with 1 being extremely low and 99 being extremely high. The scores on all 14 items were added to yield a total attitude score. A score of 1,386 is the highest attainable score and would indicate that the student views himself or herself as an outstanding teacher.

The 18 item Purdue Teaching Attitude Scale was designed to determine the students' attitudes toward teaching. The mean alpha reliability of this instrument is .86. Again a 1-99 scale was used on each item. A score of 1,782 is the highest possible score and would indicate an extremely favorable attitude toward teaching. Examples of items on the instrument are: "Anybody could be a successful teacher" and "Teachers make a positive impact on the lives of their students."

The When I Think About Teaching Scale, which measured students' perception of teaching, is a slight modivication of an instrument developed at The Ohio State University. The alpha reliability of the 50 item instrument is .92. Students' perceptions of teaching are classified as idealistic, on target or negative.

The posttest only instrument, Student's Reaction to Laboratory Teaching Experience, measured the students' attitudes toward the type of laboratory experience in which they participated (reflective teaching or microteaching). The 17 item instrument has an alpha reliability of .87. A five point Likert type scale was used with this instrument. A score of 85 was the highest possible score and would indicate an extremely favorable attitude toward the laboratory teaching experience in which the students participated.

The fifth dependent variable examined was the student teaching grade. The student teaching grade is decided jointly by the university supervisor and supervising teacher. A 6 point grading system was used with an "A" being 6, "B" 5, "C" 4, and a "D" 3.

RESULTS

Findings

There were no statistical differences between the two groups on any of the five dependent variables.

The students' perceptions of their own teaching ability increased slightly from pretest to posttest in the reflective teaching group but the increase was insiginficant. The mean pretest score of students in reflective teaching on the "Myself as a Teacher" instrument was 1046.7 while the posttest score was 1100.2. The microteaching group started at 1086 and ended at 1089.5. The highest possible score was 1386. Analysis of covariance revealed no differences ($F = 2.28$, $df = 1,41$, $p = .139$). These figures are presented in Table 1. The scores indicate the students were confident of their teaching abilities before the laboratory experience and were still confident after the laboratory teaching experience.

Table 1

Students' Perception of Teaching Ability [a]

Group	Pretest Score	S.D.	Posttest Score	S.D.
Reflective Teaching (N=22)	1046.7	148.3	1100.2	113.3
Microteaching (N=22)	1086.0	138.5	1089.5	117.4

[a] Highest possible score was 1386. ($F=2.28$; $df=1,41$; $p=.139$)

Both groups of students registered slight gains in attitude toward teaching from the start of the teaching lab to the end of the lab; however, there were virtually no differences between the two groups. The mean pretest attitude score of the reflective teaching students was 1312.7 while the microteaching students had a mean pretest attitude score of 1318.2. On the posttest the attitude score of the reflective teaching students had risen to 1373 and the microteaching students had risen to 1379. The difference between the two groups was not significant ($F=0.011$; $df=1,41$; $p=.92$). These data are present in Table 2. The scores indicated the students had positive attitudes toward teaching.

Table 2

Attitude of Students Toward Teaching [a]

Group	Pretest Attitude Score	S.D.	Posttest Attitude Score	S.D.
Reflective Teaching (N=22)	1312.7	140.5	1373.0	155.9
Microteaching (N=22)	1318.2	183.2	1379.0	117.6

[a]Highest possible score was 1782 (F=0.011; df=1,41; p=.92)

The students' perceptions of the role of teaching remained unchanged as a result of the teaching laboratory. The two groups had idealistic perceptions before and after the experiment.

In general the students had a positive attitude toward the laboratory teaching procedure they experienced. The students in reflective teaching had a mean attitude score of 66.9 out of a possible 85 points while the microteaching students had a mean attitude score of 62.7. The difference in scores was not significant (t=1.7, p=.10). A close examination of selected items on this instrument reveals several items with considerable differences in ratings (See Table 3). Items 11 and 12 which were concerned with nervousness, discomfort, and embarrassment were a concern for the microteaching students but were of less concern for the reflective teaching students.

An analysis of student teaching grades revealed no significant differences between the two groups. The reflective teaching students received a mean student teaching grade of 5.8 on a 6.0 scale while the microteaching students received a 5.4 average. This difference was not statistically significant (t=1.4, p=.18).

Conclusions

Reflective teaching appears to be as effective as microteaching in preparing students to teach. There were no differences on any of the variables according to the type of teaching laboratory students experienced. Student attitudes toward teaching, perceptions of teaching, perceptions of teaching ability, and performances during student teaching were similar for both groups. This indicates that reflective teaching could be used in place of microteaching.

Prior research had found that microteaching had a positive impact on students' self concepts, attitudes toward teaching, and perceptions of the role of teaching. The researchers had anticipated that similar findings would be present in this study for both microteaching and reflective teaching. This anticipation was not realized. Basically, there

was little change in students' self concepts, attitudes toward teaching, or perceptions of the role of teacher from the beginning of the experiment to the end. Two possible reasons for this could be: 1) differences in instrumentation among studies or 2) the fact that the students in this study had already spent considerable time in schools as part of early field experiences, thus they already were positive about teaching and had realistic views of the profession.

While this research did not examine use of time or cost of procedures it seems that reflective teaching is less expensive, saves time, and is easily transportable. Reflective teaching is a procedure that should be carefully considered for use in the future in preparing vocational teachers.

Table 3

Students' Evaluation of Laboratory Teaching Experience [a]

	Evaluation Item	Reflective Teaching Group (N = 22)	Micro-Teaching Group (N = 22)
1.	Changed, in a positive direction, the image I have of myself as a teacher.	4.0	3.7
2.	Has helped my instructor know and understand me better as a potential teacher.	3.8	3.2
3.	Has given me a feeling of competence as a teacher.	4.1	3.6
4.	Has helped me regard teaching more seriously.	4.0	4.0
5.	Raised doubts within me that I can become a successful teacher.	3.7	3.5
6.	Indicated areas where I can make improvement.	4.2	4.1
7.	Was not much more than a novel experience.	4.0	3.9
8.	Could easily be replaced by other experiences.	3.7	3.4
9.	Was time well spent.	4.1	4.2
10.	Aided in self-evaluation.	4.3	4.1
11.	Was embarrassing and discomforting.	4.3	3.6
12.	Made me more nervous than I would have been in the classroom thus reducing my effectiveness.	4.1	2.9
13.	Was helpful initially but its beneficial effects diminished with continued use.	3.6	3.8
14.	Had little application to actual teaching on the job.	3.9	3.8
15.	Would be more beneficial earlier in the teacher education program	3.0	3.0
16.	Has given me an increased appreciation for the necessity of adequate preparation for teaching.	4.0	4.5
17.	Has given me personal contact with my instructor which I would not have had otherwise.	3.6	3.1
	Total Score [b]	66.9	62.7

a. strongly agree = 5, agree = 4, undecided = 3, disagree = 2, strongly disagree = 1. The scoring of negative items (5, 7, 8, 11, 12, 13, 14) was reversed.

b. $t = 1.4$, $p = .18$

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